

FEASIBILITY STUDY

Greensboro


**Gallimore Dairy Road (SR 1555/SR 1556)
From NC 68 to Market Street (US 421)
Guilford County**

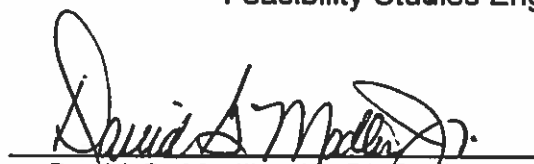
Division 7

FS-9907A



Prepared by the
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Division of Highways
N. C. Department of Transportation


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I. General Description

This feasibility study describes the widening of Gallimore Dairy Road (SR 1555/SR 1556) from NC 68 to Market Street (US 421), a distance of 2.0 miles (3.2 km). The project location is shown on Figure 1. Two alternate cross-sections were evaluated for the proposed widening. The recommended right-of-way width is 100 feet (30.5 m). The alternates are as described below:

Alternate 1

Alternate 1 is a four-lane, divided curb and gutter section, 72 feet (21.9 m) wide from face-to-face of curbs, with a 16-foot (4.9-m) wide raised grass median and 10-foot (3.0-m) berms. This cross-section includes wide outside lanes to accommodate bicycle traffic.

It is anticipated that there will be no residences and no businesses relocated due to this alternate. The total cost of the project, including construction and right-of-way, is estimated to be \$8,450,000.00.

Construction.....	\$ 6,800,000
Right-of-way.....	\$ 1,650,000
Total Cost	\$ 8,450,000

Alternate 2

Alternate 2 is a five-lane, curb and gutter section, 68 feet (20.7 m) wide from face-to-face of curbs with 10-foot (3.0-m) berms. This cross-section includes wide outside lanes to accommodate bicycle traffic.

It is anticipated that no residences and no businesses will be relocated due to this alternate. The total cost of the project, including construction and right-of-way, is estimated to be \$7,814,000.00.

Construction.....	\$ 6,200,000
Right-of-way.....	\$ 1,650,000
Total Cost	\$ 7,850,000

Currently, Gallimore Dairy Road has a great deal of undeveloped property within the project area. However, this is expected to change when the proposed I-40/Gallimore Dairy Road interchange (I-2201E, (See Figure 1)) and Gallimore Dairy Road widening are provided. *Therefore, it is recommended that Alternate 1, (four-lane divided section) be implemented by this project.* Although Alternate 1 is more expensive than Alternate 2, it is felt that Alternate 1 will maintain the operational integrity of the proposed facility more efficiently because divided sections do not promote the strip type development and indiscriminant left turn movements normally associated with five-lane sections.

However, it should be noted that five-lane sections are typically considered the standard cross-section in situations like this because of the maintenance problems associated with the raised narrow median. Therefore, the NCDOT may require maintenance agreements or commitments from the local authorities before the four-lane divided section can be provided.

This study is the initial step in the planning and design process for this project and is not the product of exhaustive environmental or design investigations. The purpose of this study is to describe the proposed project including costs, and to identify potential problems that may require consideration in the planning and design phases.

II. Need for Project

The purpose of this project is to increase the traffic carrying capacity and safety of Gallimore Dairy Road (SR 1555/SR 1556) in Greensboro. The Greensboro Urban Area MPO and the City of Greensboro support this project.

Gallimore Dairy Road is designated as a minor thoroughfare in the Greensboro Thoroughfare Plan and as a collector/minor urban arterial in the North Carolina Statewide Functional Classification System. With the proposed I-40 interchange under I-2201E, Gallimore Dairy Road should function as a minor urban arterial for its entire length.

As it exists now, Gallimore Dairy Road is mostly a two-lane, 20-foot (6.1-m) wide, shoulder section between NC 68 and Market Street (US 421) with a grade separation at I-40. The existing I-40/Gallimore Dairy Road grade separation will be reconstructed into a single point urban interchange (SPUI) under the I-40 widening project (I-2201E). In addition, the I-40 project is widening a short section of Gallimore Dairy Road to a four-lane divided section in the interchange area. With this new interchange, Gallimore Dairy Road should be able to provide access to the Piedmont Triad International Airport via US 421, as well as provide an alternate route to avoid the congested I-40/NC 68 interchange area.

There are existing traffic signals at the intersections with NC 68, I-40 (proposed under I-2201E), relocated Burnt Poplar Road (proposed under I-2201E), and US 421. Development along the project is a mixture of industrial, small office, some commercial and undeveloped land. In addition, a major petroleum fuel distribution center is located on both sides of I-40 east of the project.

Currently, there are two existing structures within the project. However, the I-40 grade separation structure (Bridge No. 153), will be replaced by TIP project I-2201E. It is expected that this new I-40/Gallimore Dairy Road interchange will be adequate to meet this projects needs and not require additional modifications. In addition, the structure carrying Gallimore Dairy Road across East Prong Deep River is currently being replaced with a triple reinforced concrete box culvert (B-2833, (See Figure 1)). This box culvert will need to be extended under the Gallimore Dairy Road widening project.

The Norfolk Southern Railroad operates a railway, which crosses the project in the area of the US 421 intersection. This railway carries 3 trains per day at an average speed of 35 mph (56.3 k/hr). Based on the Policy and Procedure Manual, the exposure index for the Gallimore Dairy Road crossing is 44,100. Given this information, it would be very desirable to provide a railroad grade separation at this location. However, given the proximity of this railroad crossing to US 421 and the Piedmont Triad International Airport, a railway grade separation/US 421 interchange is considered impractical. Therefore, this feasibility study does not contain cost for an interchange at this location.

As previously stated, TIP Project I-2201E will construct a new interchange at the I-40/Gallimore Dairy Road junction and widen Gallimore Dairy Road to a multilane facility in the area of the interchange. Project I-2201E is currently in right-of-way acquisition and is scheduled for construction in January 1999. It should also be noted that TIP Project B-2833 is currently reconstructing the Gallimore Dairy Road bridge (Bridge No. 78) over the East Prong Deep River, with a triple reinforced concrete box culvert.

The current year Average Daily Traffic (ADT) along Gallimore Dairy Road is estimated to be between 6,077 to 11,751 vehicles per day (vpd). For the design year 2025, the estimated traffic volumes on Gallimore Dairy Road will range between 13,400 and 23,900 vpd. Truck traffic is estimated to make up five percent of daily traffic.

Currently Gallimore Dairy Road is operating at Level of Service (LOS) D or better. If no improvements are made, it is projected that the roadway will operate at LOS F in the design year 2025. If Gallimore Dairy Road is widened to a four-lane divided curb and gutter section, the facility should operate at a LOS C or better in the current year and at LOS C in the design year 2025. However, the signalized NC 68 intersection is expected to operate at a LOS F in the design

year 2025. Before an acceptable LOS can be achieved at this intersection, major geometric improvements to NC 68 will be required and are considered well beyond the scope of this project.

During the three-year period from May 1995 through April 1998, there were 68 accidents reported on Gallimore Dairy Road within the project limits. There were 33 injuries reported as a result of these accidents, including 1 fatality. The accident rate along Gallimore Dairy Road within the project limits is 887.73 accidents per 100 million vehicle miles (acc/100mvm). This compares with the 1995 to 1997 statewide rate of 263.48 acc/100mvm for urban secondary 2-lane roadways.

III. Discussion of Alternates / Recommendations

It is recommended to widen Gallimore Dairy Road (SR 1555/SR 1556) to a multilane facility from NC 68 to the proposed four-lane, divided section under I-2201E (approximately 650 feet south of I-40) and then from the relocated Burnt Poplar Road intersection (I-2201E) to US 421. There are two cross-section alternatives currently being considered for this project. Alternate 1 is a four-lane, divided curb and gutter section, 72 feet (21.9 m) wide from face-to-face of curbs, with a 16-foot (4.9-m) raised grass median and 10-foot (3.0-m) berms. Alternate 2 is a five-lane curb and gutter section, 68 feet (20.7 m) wide face-to-face of curbs with 10-foot (3.0-m) berms. Both alternates have wide outside lanes to accommodate bicycle traffic and are on 100 feet (30.5 m) wide right-of-way. This project is expected to follow the existing alignment of Gallimore Dairy Road.

This project includes the relocation of Chimney Rock Road (SR 1554) to improve the intersection skew angle. The westbound Gallimore Dairy Road approach to the NC 68 intersection requires additional widening to provide dual left turn lanes, one through lane and one right turn lane. Finally, the westbound US 421 approach at the Gallimore Dairy Road intersection needs to be widened to provide dual left turn lanes onto southbound Gallimore Dairy Road.

Alternate 1 (Recommended)

Alternate 1 is a four-lane, divided curb and gutter section, 72 feet (21.9 m) wide from face to face-of-curbs, with a 16-foot (4.9-m) wide raised grass median and 10-foot (3.0-m) berms. It is anticipated that no residences or businesses will be relocated due to the project. The total cost of the project is as follows:

Construction.....	\$ 6,800,000
Right-of-way.....	\$ 1,650,000
Total Cost	\$ 8,450,000

A transportation benefit analysis was also completed for this project. For the period between the current year and the 2025 design year, it is estimated that the total transportation benefits for the project are \$28,920,000, which is an average of \$1,071,111.00 per year. The total benefits include accident cost savings, time cost savings, and operating cost savings.

Alternate 2

Alternate 2 is a five-lane, curb and gutter section, 68 feet (20.7 m) wide from face-to-face of curbs, with 10-foot (3.0-m) berms. It is anticipated that no residences or businesses will be relocated due to the project. The total cost of the project is as follows:

Construction.....	\$ 6,200,000
Right-of-way.....	\$ 1,650,000
Total Cost	\$ 7,850,000

A transportation benefit analysis was also completed for this project. For the period between the current year and the 2025 design year, it is estimated that the total transportation benefits for the project are \$28,710,000, which is an average of \$1,063,333.00 per year. The total benefits include accident cost savings, time cost savings, and operating cost savings.

IV. Other Alternatives Considered

The initial feasibility study request included an "Old Friendly Road Connector" from the Market Street (US 421) intersection to Old Friendly Road. This connector crossed property owned by the Piedmont Triad International Airport. Based on discussions with personnel from the NCDOT's Aviation Division, the airport has plans to extend the runway across this area. Given this information, it is highly unlikely that the Old Friendly Road Connector will be possible and a detailed study of this alternative was not performed.

A Gallimore Dairy Road alignment alternative which intersected Market Street (US 421) at the Friendly Avenue intersection was briefly studied. This alternate follows the existing alignment up to the relocated Burnt Poplar Road intersection, then proceeds on new location across the industrial park east of the existing Gallimore Dairy Road until it intersects US 421. However, this alternative is expected to have poor horizontal alignment and requires an interchange at US 421 because of the elevation difference between the railroad and US 421. Considering these factors, a detailed study of this alternative was not performed.

V. Additional Comments

An environmental screening was not conducted for this study. No historic properties or endangered species are anticipated. However, some wetlands will likely be encountered with the East Prong Deep River crossing, and a Corps of Engineers Section 404 Permit is anticipated. In addition, this section of East Prong Deep River, within the project corridor, is a Class WS-IV waterway and is classified as a critical area. This waterway is part of the Cape Fear River Basin.

The NCDOT Division of Bicycle and Pedestrian Transportation has requested that bicycle accommodations be provided under this project where appropriate. Under the I-2201E project, bicycle provisions are being considered in this area. Therefore, the cross-section alternates for this project include wide outside lanes needed for bicycle traffic.

North Carolina Department of Transportation Program Development Branch	
FS-9907A Gallimore Dairy Road (SR 1555/SR 1556) From NC 68 To Market Street (US 421) Guilford County	
DIVISION 7	FIGURE 1